EFFECTS OF MICROLEARNING ON DEVELOPING STUDENT'S MATH SKILLS WITH TAKING INTO ACCOUNT PSYCHOLOGICAL ASPECTS

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ABSTRACT

Microlearning or micro-education is the breaking down of learning content into easily-digestible, bite-sized chunks. With human short-term memory only able to hold up-to-five pieces of new information (before getting overwritten or shunted out) forcing learners to partake in lengthy courses makes little sense. It's far more effective to stick to one, highly-targeted topic. This way knowledge has a much higher likelihood of becoming embedded. Applying Microlearning in education becomes an advantage in simplifying and achieving the goals of any course. The study aims to reveal the effects of applying this teaching method in mathematics learning on some classes of students, as well as identifying how this new method is applied, requirements of applying Microlearning in mathematics, and the results of applying such a method. Also, the psychological aspects and effects are studied and analyzed. The factors that affect developing such method were discussed, such as: effects of training of both staff and students, math curriculum development, services in the school, and learning management system. Hypothesis of the study covers all such factors, such hypothesis was tested using ANOVA analysis. It was found that staff training and improvement (TI), students training (ST), teaching system management (TSM), math curriculum improvement (MCI), and facilities and services (FS) have a considerable effect on the success of ML method in math teaching.

KEYWORDS: Microlearning, Mathematics Learning, Student's skills & Education

Original Article

INTRODUCTION

Microlearning is defined as an educational situation that takes place in a short time and period not exceeding ten minutes in which a small number of students participate, through which the teacher introduces a specific concept or trains students on a specific skill (Abadi, 2013). It was also defined as a training concept that can be applied in various stages of professional programs for teachers, whether it is training prior to the educational process, or during work, consisting of complex skills that can be renewed through behavior update or intensive training (Al-Tom, 2012). Another researcher defined it as a unit focused on satisfying one of the multiple educational outcomes, by dividing a multi-disciplinary topic for the learner, and allowing him to arrange it according to the learner's choice (Omer, 2017). Andriotis (2015) defined microlearning as one of the targeted learning faces that is limited to a short explanation in a period of 3-6 minutes, in which the student takes on the role of a teacher. Thus, this type of education focuses on specific learning outcomes and can also be used as part of formal training. In addition, microlearning can also be defined as an emerging learning strategy to fill gaps and skills. Hence, such a type of learning appears to be an ideal educational approach for many of the following situations, as follows:

- Rapid Information changes and technological developments.

- People with difficulties keeping up.

- Resources available free online.

- Modern technologies that support this.

Based on the above, micro-education can now be defined as a training position that contributes to the qualification of teachers through their presence in a group of educational situations, and an evaluation of the nature of their interaction with it. It is an educational method that aims to apply the concept of learning within certain limits and within a designated space depending on the teaching of a topic specified within agreed rules. Micro-education is used for learners who are in need of a rapid revamp or revision, and an employee who does not have time to learn a skill through a full course uses it to resort to microlearning (Andriotis, 2015).

Benefits of Micro-Education

Micro-education is a real application of the educational process, and has elements such as the teacher and the student. There are several benefits and advantages to micro-education, where not only in teaching training, but also in other fields of learning and teaching, such as training to prepare educational materials, evaluating the performance of teachers as well as students, and conducting applied research. It has many benefits in training company's employees, training students, teachers and many more. The following is a statement of the most important advantages and benefits of micro-education (Eldridge, 2017):

- Provide a preferable fit, as it matches the nature and flow of both the individual and the work requirements.

- Promote integration in training in its various forms, by removing the obstacle of boredom.

- An ideal fit to human memory and how it works.

- Improve business results by achieving the best possible benefits through Micromum inputs.

- Adapts to the pattern of the growing majority of the workforce.

- Saves time and effort.

- Training teachers on several important teaching skills, such as accuracy in the preparation of educational materials, and organization.

- Discussing the trainee immediately after the end of micro-teaching, and the possibility of the supervisor's intervention during the performance of the trainee.

- Linking theory and practice.

The Importance of Micro-Education

Micro-education has a great importance that positively affects the teacher, and this importance can be summarized in the following points: (Anil, Ogalo, 2012).

- Improves students' skills and their ability to work actively and effectively.

- Micromizes the complexities of the teaching situation in the event of encountering embarrassing situations during the teaching process.

- Helps keep learning vital in the longer-term after completing the training or teaching phase.

- Helps in preventing common mistakes among junior teachers.

- Aids in gaining self-confidence.

- Provides the opportunity for feedback, which is considered one of the most important elements of training. The feedback may come from the trainees themselves upon seeing their performance by reviewing a recorded TV tape. Feedback may also come from the trainer or peers involved in the training process.

- Provides the opportunity for the trainee to introduce new modifications to their educational behavior through re-performance after feedback.

Steps of Microlearning Process

Micro-education is considered a way for the student to try, analyze, discuss, and confront the difficulties encountered by the teacher in his educational path, so the teacher must follow a number of steps, as represented by Chattopdhyay (2015), as follows:

1) Planning and Performance

This step is considered one of the most vital elements of the teaching process. Planning is executed through long-term and short-term goals, which is set by the teacher in order to achieve them. Where long-term goals consist of values and concepts. While short-term goals are educational goals such as teaching methods and curricula. As for the performance, it is represented by analyzing the school material into skills that the student can control.

2) Observation

This step depends on the teacher's or the supervisor's careful observation. In which they are responsible to take notes, observing, and evaluating the student's performance, behavior, and movements.

3) Follow-up

This step is specified for the teacher only. Where, after each Micro-learning session, teachers record their observations, opinions, impressions on the student's performance, and the extent of the response for the rest of the students on their performance.

4) The Teacher's Vitality

This final step is very necessary in the department. The allusions and suggestions that are not verbal or formal are among the most important components of the vitality of the teacher's performance

Types of Micro-Education

Micro-education differs according to the level of the trainees, the skill to be trained on, or the nature of the program applied. These divisions can be limited to the following types (Abbis, 2011):

- Early training: Which begins during the studies and before graduation, such as field training or practical application.

- In-service training on micro-teaching: This type includes teachers who work in the teaching profession and

receive training on skills they have not previously received simultaneously.

- Continuous Micro-education: This type focuses on the student from the early stages of education and continues until their graduation.

- Final Micro-education: Which is the teaching that the trainee teacher performs in the final year or the last semester of the program.

- Directed Micro-education: This type of education includes directed forms of microlearning, including the model microlearning. For instance, the teacher could rely on a model and asks students to apply it with similar steps.

- Micro-education, free and unguided: This type aims to build and ensure that the teacher has the teaching competence in preparing educational materials, presenting lessons, and evaluating learners' performance.

- General micro-education: This type is concerned with the basic skills required by the teaching profession in general, regardless of the nature of specialization, teaching materials, and the level of students.

- Special micro-education: In contrast to the above type, this type is concerned with training skills to a specific field of learning and teaching. It is specified for either a group of students or teachers that are specialized in such a field.

Characteristics of Micro-Education

There are various characteristics of Micro-education, the most important of which are:

- It helps the teacher to acquire new skills and develop their educational information.

- Partial, due to its short duration, as it focuses on a narrow topic, concept, or idea.

- The number of student teachers within the group does not exceed 6-8 individuals, and some of them are 4-10 individuals.

- Its duration is short, as the time allocated to commenting on the educational lesson, or on the training skill is small and does not exceed 5 minutes.

- Diverse, as the content can be any form of skills, such as how to start and end a presentation, activity, game, contest, dialogue and discussion, video, chapter in a book, and many more.

- Skills training on a comprehensive scientific basis, starting with theoretical knowledge related to the skill, and ending with reaching the point of mastery.

- Easy observations and analysis on the part of the student teacher or on the part of the supervisor.

- Skill training takes place in specialized training rooms.

- Concentration during training on one teaching skill, so that the trainee teacher can master it well in a short time (Mandelli, 2014).

Criticism of Micro-Education

There are advantages and disadvantages to every method of teaching. Some studies criticized the micro-education way of teaching which includes:

- The teaching process is divided into many activities and skills, thus this type of education may cause the students to lose some of their integrated mission, which makes it difficult to fully absorb such skills.

- Skills are being trained separately without being linked to the rest of the skills.

- In the Micro-lesson, the students' meeting with the trained teacher is not repeated.

- The trained teacher faces difficult situations in the presence of elderly students despite their small numbers.

For instance, neglecting the social aspects of the teaching work is one of the cons in micro-education teaching (Jomah et al, 2016).

The following is a review of previous studies dealing with the concept of micro-education: Jomah et al. (2016) discuss micro learning and about the micro-content management system. The study reflected the views of different users, and will analyze the collected data. Finally, it concluded with its pros and cons, it was found that micro learning concepts, based on mobile web learning, lead to a modernized education system. Microcontents are a small burst of learning objects which are informal, but enrich the knowledge input. The study basically identifies the gap between the uses of electronic devices with micro learning. Even though more preferences were given to learning systems based on electronic devices, a lack of awareness of micro learning was identified at the initial stage. After creating awareness, the latter part of the study clearly specified that micro learning is highly useful, and can be used for knowledge acquisition as well as for skill growth irrespective of diverse subjects. Zahid (2017) conducted a study aimed at determining the effectiveness of micro-teaching as one of the approaches to prepare teachers in equipping female students of home economics at the College of Education in Dalam area. This study was applied to the 39 sixth-level students, and the research reached the following results: There are differences of high statistical significance. For the benefit of the experimental group who studied the micro-teaching method, which means that they acquire the competencies of applying active learning strategies in teaching home economics topics. A study by Eid (2017) aimed to reveal the effectiveness of the use of Micro-teaching in developing oral language performance skills among students of field training who are not specialized in the Arabic language. Oral linguistic performance skills before using Micro-teaching, and the results of this study proved that the use of Micro-teaching had a significant effect on developing oral language performance skills of the sample members. After reviewing a number of previous studies, it was found that micro-education is important in all areas of life, and that there are a number of researchers who are invading the use of micro-education in all fields, whether educational or social, because of its effectiveness in achieving the desired results of mastering specific skills.

METHODOLOGY

The population in this work involves private and public schools in Kuwait. The sample includes about 12 public and private schools. Before distributing the questionnaire to all targeted organizations, a pretest pilot study was conducted. A random sample of 6 firms were selected to test the questionnaire for its clarity, comprehensiveness, and acceptability, as suggested by (Rea and Parker, 2005). Thereafter, an electronic copy and a hard one were sent to 10 reviewers 3 of them made a response and corrected some points. After that, the questionnaire was distributed to 350 teachers and schools' staff in about 10 different schools. Only 280 responses were received with a response rate of 80%, about 70 of the responses were incomplete which means that the number of questionnaires taken really into consideration are 220 with a ratio of 78.5%. Responses from participants were collected, and entered into Microsoft Office Excel spreadsheet. Then, a detailed statistical analysis has been carried out. For more detailed statistical analysis, the data were uploaded to IBM SPSS

statistics software.

RESULTS AND DISCUSSIONS

The study has 10 hypotheses as shown in table (1), the hypothesis shows the relation between applying microlearning in math learning and its effects on improving the educational process. To apply micro-learning (ML) in educational process, some changes should be taken either in training both students and staff, math curriculums, teaching system management (TSM), and facilities and services (FS). Such hypotheses should be tested using ANOVA technique.

Hypothesis

Table 1: Hypothesis of the Study

H1	$H1_0$	Microlearning (ML) application has no effect on improving educational process (EP) of math
	$H1_1$	Microlearning application has a significant, positive effect on improving educational process of math
H2	$H2_0$	ML implementation has no effects on effect on the development of EP
	$H2_1$	ML implementation has a significant, positive effect on the development of EP
H3	$H3_0$	Training on ML in its various forms has no effect on improving EP of math.
	$H3_1$	Training on ML in its various forms has a significant effect on improving EP of math
H4	$H4_0$	ML has no effect on Saving time and effort of both staff and students during math education.
	$H4_1$	ML has a significant effect on Saving time and effort of both staff and students during math education
H5	$H5_0$	ML has no effect in Linking theory and practice of the math EP.
	$H5_1$	ML has a significant effect in Linking theory and practice of the math EP.
H6	$H16_0$	ML has no importance that positively affects the teachers of math EP
	$H6_1$	ML has a good importance that positively affects the teacher of math
H7	$H7_0$	ML has no effect on improving students' skills and improves their ability to work seriously and actively during math lessons.
	$H7_1$	ML has a significant effect on improving students' skills and improves their ability to work seriously and actively during math lessons.
H8	$H8_0$	ML has no effect on reducing the complexities of the teaching situation in the event that it encounters embarrassing situations during the teaching process of math which effects positive psychologically.
	$H8_1$	ML has a significant effect on reducing the complexities of the teaching situation in the event that it encounters embarrassing situations during the teaching process which effects positive psychologically
H9	$H9_0$	ML has no effect on helping students in gain self-confidence during solving math problems.
	$H9_1$	ML has a significant effect on helping students in gain self-confidence during solving math problems.
H10	$H10_0$	ML has no effect in Providing the opportunity for feedback after solving math problems
	$H10_1$	ML has a significant effect in Providing the opportunity for feedback after solving math problems

Samples Characteristics

The samples taken in this study have many demographic information. It mainly includes the staff member years of experience and the age of institution. Such features are tested in the following two sub-sections.

Experience Years

Figure (1) shows that the majority of the study sample have 9 years of experience or less. Followed by 30% of the category with 10-19 years of experience. While the lowest ratio of 20% were the category of 20 years of experience or more.
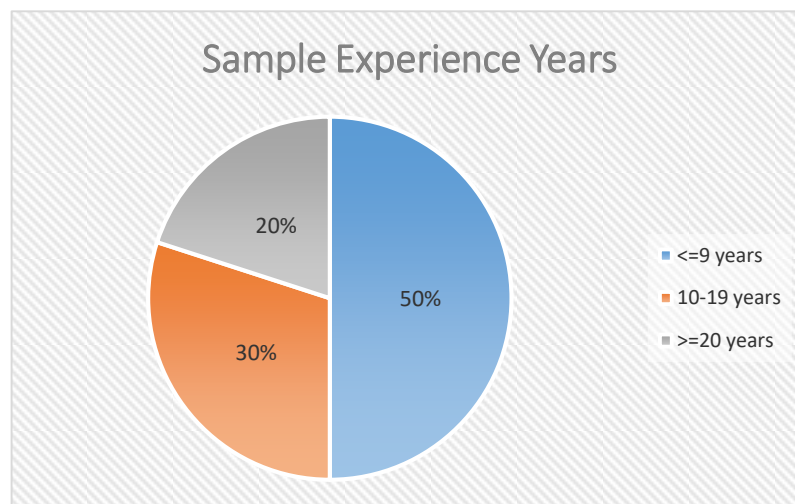
Figure 1: Distribution of Sample based on Years of Experience.

Institution Age

Figure (2) shows that the institution age of the majority of the sample are within 10 years or less. Followed by 27% of the studied institution aged 11-20 years. While 13% of the sample were institutions aged 20 years or more.
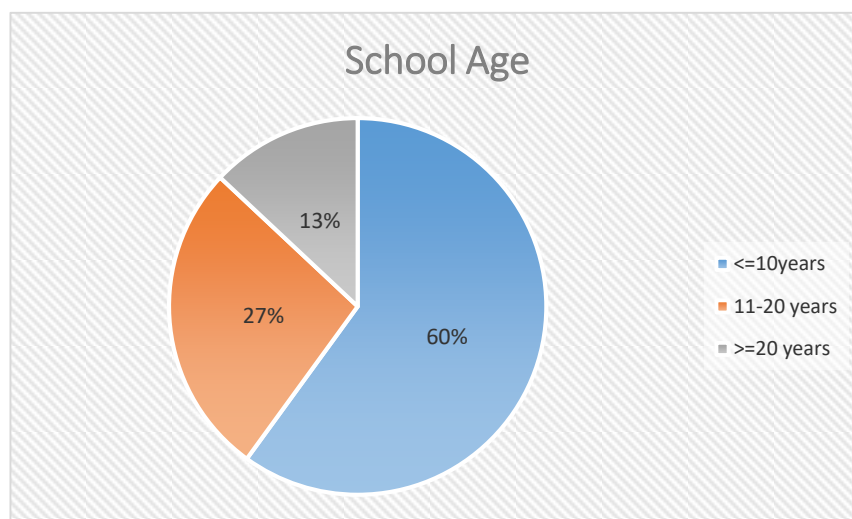
Figure 2: Sample Distribution based on Institution Age.

Data Analysis and Interpretations

To estimate the Implementation Index (II) for each Microlearning education process (MLEP) the total score average for all received responses were computed and divided by 5 times the number of questions for this latent, as shown in Equation (1) below. It was divided by 5 based on the Likert scale, which was implemented on a five points scale. The results can be interpreted according to table (2).

$$\text{Implementa tion Index (II\%)} = \frac{\sum Scores\,average\,for\,each\,question}{(5)*Number\,of\,Questions} \times 100 \tag{1}$$

Table 2:Statistical Standard for the Interpretation of the Arithmetical Averages of Variants MLEP latent

Implementation index II	$0 < II \leq 20\%$	$20 < II \leq 40\%$	$40 < II \leq 60\%$	$60 < II \leq 80\%$	$80 < II \leq 100\%$
Interpretation	Poor	Fair	Good	Very Good	Excellent

The first latent Microlearning education process "MLEP" is chosen as an example to calculate the score average and the level of implementation for this variable. Table 3 shows the implementation index for Microlearning education process depending on the education system, which can be computed as follows:

$$\text{Implementa tion Index (II\%)}_{\text{MLEP-TI}} = \frac{4.2 + 4.4 + 3.8 + ... + 3.9}{(7)(5)} \times 100 = 79.00\%$$

According to Table (3), the implementation of MLEP related to training and development is "Very good". Similarly, the implementation index of all MLEP, which are students training (ST), teaching system management (TSM), math curriculum improvement (MCI), and facilities and services (FS) were calculated and presented in tables (4, 5, 6, and 7) respectively. The overall results are tabulated in Table (8). The overall average of implementation Index for the MLEP is found to be 78.70%, which means the considered education system is a very good implementer for lean principles.

Table 3: Implementation Index of Staff Training and Improvements (TI)

No.	Item	Score Average
1.1	This teaching institution provides new trained teaching staff with basic background information needed to perform their teaching tasks satisfactorily	4.2
1.2	This institution provides new teaching staff with a general overview about the main vision of the association depending on ML method	4.4
1.3	Prior to implementing training, this institution conducts a complete skill assessment to pinpoint the aspects that have skill shortage	3.8
1.4	This educational institution performs systematically prepares of an annual training plan and budget	3.8
1.5	This institution focuses on future-oriented learning that is not necessarily related to the employee's current teaching	3.7
1.6	In this educational organization, there is a teaching enrichment to encourage the personal advancement of teaching staff	3.9
1.7	This school measures and evaluates returns achieved from the training and developments programs attended by staff related to ML	3.9
Average of TI practice		**3.9**
TI implementation index		**79.00%**
Interpretation		**Very Good**

Table 4: Implementation index for Students Training (ST)

No.	Item	Score Average
1.1	Students at this school having a training programs in all academic aspects related to ML	3.4
1.2	Students at this school having a training programs in non-academic aspects related to ML	3.4
1.3	This institution focuses on qualifying their students in academic, social and environment aspects related to ML	3.9
1.4	This institution has a programmed activities for many national, religious and social events depending on ML	4.2
Average of ST practice		**3.7**
ST implementation index		**74.90%**
Interpretation		**Very Good**

Table 5: Implementation Index for Teaching System Management (TSM)

No.	Item	Score Average
1.1	Depending on ML, there is an existence of communication between the managers, specialized, and non-specialized teaching staff and other workers and employee	4.2
1.2	There is a system for teaching staff ' suggestions, whereby suggestions are applied and studied related to ML	4.0
1.3	In this educational association, the upper-level staff give decision-making authority to the lower-level staff	3.5
1.4	Decentralization policy is used in this association	3.6
1.5	Teaching staff are given information on the overall situation and prospects of the school	3.9
1.6	This educational institution has a formal and systematic performance appraisal process in which it evaluates the achievement of individual targets and identifies the development needs for teaching staff	4.0
1.7	The teaching workforce management system adopted in this institution improves productivity and throughput and reduces costs and time losses	4.0
1.8	This institution defines an appropriate length of time for each teaching-related task for teaching staff and tasks time for other employee	4.1
1.9	When this institutions measures or evaluate the productivity and performance of teaching staff and other employee, it takes into account the time spent between assignments or indirect time instead of just accounting for fulfilling the goals achieved in its evaluation operation	3.8
Average of TSM practice		**3.9**
TSM implementation index		**78.50%**
Interpretation		**Very Good**

Table 6: Implementation Index for Math Curriculum Improvement (MCI)

No.	Item	Score Average
1.1	The institution updated its courses upon the general objectives of the general curriculum of the Micros try of education depending on ML	4.2
1.2	The curriculum is reviewed periodically to apply ML	4.0
1.3	The curriculum for all courses concentrated on students interests and upon the updated issues in science and materials related to ML	3.9
1.4	The curriculum for all courses encourages teachers to use new educational methods and strategies and activities like ML	3.8
1.5	The curriculum followed in this institution concentrates on reducing times and increasing productivity using ML.	4.0
Average of MCI practice		4.0
MCI implementation index		**79.60%**
Interpretation		**Very Good**

Table 7: Implementation Index for Facilities and Services (FS)

No.	Item	Score Average
1.1	The institution encourages teaching staff using variant teaching techniques like ML.	4.2
1.2	The institution encourages teaching staff to perform learning and non-leaning activities.	4.0
1.3	The institution encourages teaching staff to use educational technologies and modern teaching systems like online and distance learning methods.	3.5
1.4	The institution encourages the integration between teaching staff and other managerial workers and staffs.	3.6
1.5	The institution offers media and other helping tools and equipment to the teaching staff like smart boards, data-shows, interactive board.	3.9
1.6	The institution take care of other staffs in the system like service workers, bus drivers, supervisors, and others.	4.0
1.7	The institution offers good teaching environment like buildings, sport equipment and pitches, cleaning and maintenance systems... etc.	4.0
1.8	The institution try to offer new and updated textbooks and references and other teaching requirements.	4.1
Average of FS practice		4.0
FS implementation index		**80.00%**
Interpretation		**Very Good**

Table 8: Summary for the Implementation Level Results of each Construct Latent Variable

Construct Latent Variable	Mean $(\bar{x})$	Variance (s^2)	Implementation Index (%)	Interpretation
Training and development (TD)	4.0	0.874	79.00	Very Good
Students Training (ST)	3.7	0.820	74.90	Very Good
Teaching System Management (TSM)	4.0	0.835	78.50	Very Good
Math Curriculum Improvement (MCI)	4.0	0.836	79.60	Very Good
Facilities and Services (FS)	4.0	0.854	80.0	Very Good
Overall MLEP implementation level	**3.94**	0.844	**78.40**	**Very Good**

Table (8) shows that the overall MLEP implementation level of the selected sample of Kuwaiti education systems as "very good" implementations of lean principles with an index % of 78.4%. Figure (3) illustrates a visual comparison between implementation indices of all models latent
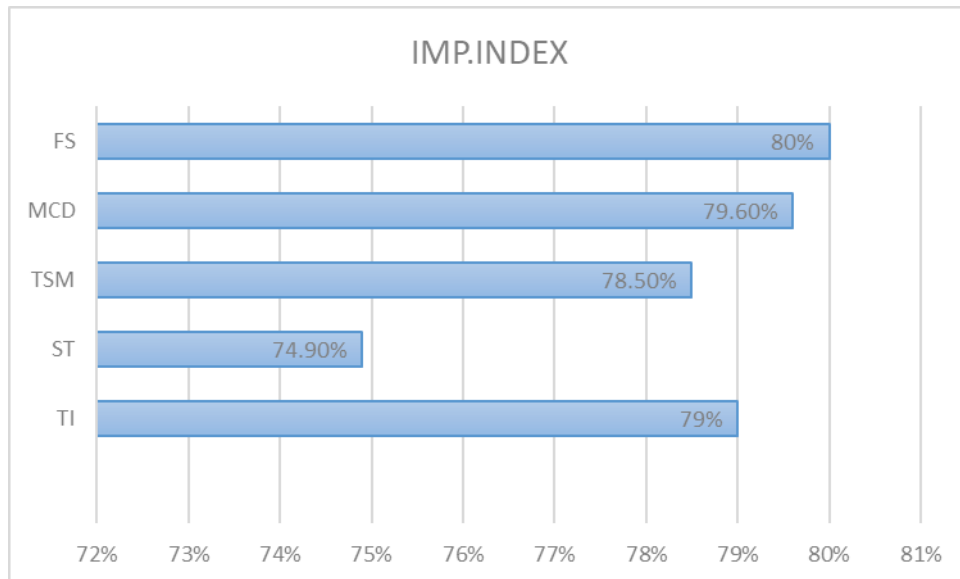
Figure 3: Visual Comparison of Implementation Index between MLEP's Latent Variables.

Hypothesis Analysis

To highlight the hypothesis testing results, the null hypothesis H0 is to be stated whether it was or was not rejected at a specified significance level (α-value). The smallest significance level is called the "P-value". The P-value is defined by Montgomery and Runger (2011) as "the probability of obtaining a value of the test statistic that is at least as extreme as that observed when the null hypothesis is true."

P-value represents the probability of Type I error, or the probability of rejecting the null hypothesis while the hypothesis is true. Operationally, once a P-value is computed, a significance level of 0.01 is considered for this study. A hypothesis will be rejected if the P-value is less than significance level of α= 0.01. In this study, it is not easy to compute the exact P-value for statistical tests manually. Therefore, IBM SPSS statistics is used to conduct the needed statistical procedures to report the results of hypotheses testing in terms of P-values., namely, a paired sample correlation and a paired sample test. The results of the conducted statistical testing are illustrated in Table (9). To analyze the hypotheses listed in chapter four of this study, let us consider the hypothesis H1 as an example. Hypothesis H1 suggests the following:

H10: Microlearning (ML) application has no effect on improving educational process (EP) of math

H11: Microlearning application has a significant, positive effect on improving educational process of math

The paired sample correlation and paired sample test confirm that H1 has P-values of zero (i.e., P-value < 0.01) which means that H10 can be rejected at a significance level of 0.01. Thus, the alternative hypothesis H11 is true. The hypotheses (from H2 to H10) were found to have P-values below 0.01, which indicates that the null hypotheses of them are rejected and the proposed alternative hypotheses are true.

Table 9: Results of the Hypotheses Testing for the MLEP Model

Alternative Hypothesis	Relationship	Paired Sample Correlation		Paired Sample Test			Decision
		Pearson	*P*-value	*t*-value	DF	*P*-value	
$H1_1$	ML-EP of math	0.994	0.000	11.832	219	0.000	Reject $H1_0$
$H2_1$	ML-Development of EP	0.962	0.000	20.541	219	0.000	Reject $H2_0$
$H3_1$	ML- Improving EP	0.985	0.000	10.409	219	0.000	Reject $H3_0$
$H4_1$	ML-Saving time and effort	0.958	0.000	3.518	219	0.001	Reject $H4_0$
$H5_1$	ML- Linking theory and practice of the math EP	0.990	0.000	4.159	219	0.000	Reject $H5_0$
$H6_1$	ML- Positively affects the teachers of math EP	0.959	0.000	14.250	219	0.000	Reject $H6_0$
$H7_1$	ML- Improving students' skills	0.981	0.000	2.436	219	0.016	Reject $H7_0$
$H8_1$	ML- Reducing the complexities of teaching Math	0.980	0.000	3.046	219	0.003	Reject $H8_0$
$H9_1$	ML- Helping students in gain self-confidence	0.993	0.000	8.657	219	0.000	Reject $H9_0$
$H10_1$	ML- Providing the opportunity for feedback	0.973	0.000	18.372	219	0.000	Reject $H10_0$

Analysis of the Developed Structural Equation Model

To test the relationships between each model latent and the overall MLEP, Analysis of Variance (ANOVA) test has been carried with IBM SPSS. ANOVA is "a method of decomposing the total variability in a set of observations, as measured by the sum of the squares of these observations from their average, into component sums of squares that are associated with specific defined sources of variation" (Montgomery and Runger, 2011). To apply ANOVA test, latent factor has to be constructed with certain number of questions for each latent factor that affect the design of the proposed MLEP. Table (10) displays one-way ANOVA outcomes for the entire MLEP.

Table 10: One-Way ANOVA Analysis for the Entire SEM

Dependent Variable	Practice	Source of Variation	Sum of Squares	DF	Mean Square	f_0	v_1	v_2	*P*-value	Conclusion
	TI	Between Groups	170.618	6	28.43	1.62	6	255	0.000	TI has an effect on MLEP
		Within Groups	4474.995	255	17.549					
		Total	4645.613	261						
	ST	Between Groups	168.505	3	56.168	1.81	3	262	0.000	STQA has an effect on MLEP
		Within Groups	8130.384	262	31.032					
		Total	8298.889	265						
	TSM	Between Groups	171.581	8	21.447	1.53	8	250	0.000	TSM has an effect on MLEP
		Within Groups	3502.5	250	14.01					
		Total	3674.081	258						
	MCD	Between Groups	170.104	4	42.526	1.71	4	260	0.000	CD has an effect on MLEP
		Within Groups	6465.94	260	24.869					

		Total	6636.044	264					
	FS	Between Groups	170.986	7	24.426	1.64	7	256	0.000	FGS has an effect on MLEP
		Within Groups	3812.864	256	14.894					
		Total	3983.85	263						

The ANOVA outcomes in Table (10) indicates that the P-value for all latent is less than α = 0.01, and f_0 has a value greater than $f_{α,v1,v2}$ (where the significance level α = 0.01), which means that the overall MLEP is affected by each latent. After testing the interactions between each model latent and the MLEP, Multicollinearity, reliability, and model fitness tests were conducted to check the interactions between each model latent and to analyze the model fitness.

CONCLUSIONS

In this paper, microlearning or micro-education were discussed, the factors contributing to or affecting building the microlearning method are discussed. It was found that staff training and improvement (TI), students training (ST), teaching system management (TSM), math curriculum improvement (MCI), and facilities and services (FS) have a considerable effect on the success of ML method in math teaching. The hypothesis tests prove that ML has a good effect in improving the education process of math and enhancing the student's skills in understanding math principles.

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